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papers describe work on vertebrate preparations (node of Ranvier, electroplax, skeletal muscle, neuroblastoma cells), rather than the squid axon which has dominated studies in this field in Britain and the USA.

Toxins acting on sodium channels can be classified into blockers, modulators, and inactivation inhibitors, with some overlap between the last two groupings. There is a clear account of blocker action (TTX, STX, local anaesthetics; Ulbricht), and several very interesting articles on the modulator alkaloid batrachatoxin (BTX), which apparently converts normally inactivating channels into partially or non-inactivating ones (Naumov; Yelin et al.; Khodorov; Soldatov et al.). Palytoxins, from species of the coral coelenterate *Palythoa*, are among the most potent membrane-active agents yet described. Although initially regarded as specific neuro- and cardio-toxins, they are now shown to increase cation permeability of membranes in general, possibly by interaction with the Na-K ATPase, turning the sodium pump into a pore (Beress; Tesseraux et al.; Stengelin et al.). Future studies of these toxins should be of great interest.

The molecular structure of the acetylcholine receptor is now known in some detail, and several articles here show how analysis of toxin structure can give clues about receptor geometry. Use of a battery of physical and chemical techniques shows that the toxin–ACh receptor interaction involves several regions of the toxin molecule, but no single region is essential (Saenger et al., Tsetkin et al., Muhn et al., Chibber et al., Surin et al., Bystrov et al.). The final section includes a useful review of the pharmacology of neuronal Ca channels (Kostyuk) and reports on several further toxins.

There are some rewarding nuggets here for the conscientious prospector, and the book is a timely guide to studies in progress in Germany and the USSR. As a review of the field, the book would have been much more useful if each section had begun with an authoritative summary and overview. As it is, only specialist toxicologists are likely to want to buy the book.

N.J. Abbott

Biosynthesis and Function of Plant Lipids

Edited by W.W. Thompson, J.B. Mudd and M. Gibbs

American Society of Plant Physiologists; Rockville, MD, 1984

xiii + 268 pages. $15.00

This book is based on the proceedings of the 6th annual symposium in botany held at the University of California, Riverside, in January 1983. The proceedings contain 15 contributions on a wide variety of topics on plant lipids. The first contribution by Stumpf and Shimakata reviews the current stage of knowledge of the molecular structure of plant fatty acid synthetase. It serves as a good overview for those researchers new to the area especially considering the contribution made by the Davis group to this area of research. The following chapters are concerned with (1) Phospholipid metabolism in post-germinating castor bean as a system to characterize and compartmentalize the enzymes involved; (2) Galactolipid biosynthesis in leaves – particularly addressing the difference between metabolism in 16:3 and 18:3 plants; (3) Phosphatidylcholine as an intermediate in polyunsaturated triacylglycerol biosynthesis; (4) The fatty acid composition of chloroplasts and their effect on thylakoid appression and primary photochemistry. There are several contributions on the structural role of plant lipids ranging from a general consideration to specific roles in the molecular organization of photosynthetic membranes and membrane fusion in salt glands.

Surprisingly the book contains a contribution on the influence of lectins on plant membranes, aimed

at assessing the possible mitogenic effect of lectins on tobacco cells. This contribution is probably more suited to a book on plant tissue culture.

The remaining contributions are concerned with free radical mediated changes in membrane lipid bilayers, carotenoid and terpenoid biosynthesis and the potential of jojoba as a new crop.

Much of the information presented is already in the literature, but overall the book is recommended to those interested in a wider appreciation of plant lipid biochemistry.

Toni Slabas

Biochemical Plant Pathology

Edited by J.A. Callow

John Wiley and Sons; Chichester, 1983

xi + 484 pages. £34.50

This book is the first attempt to provide a comprehensive biochemical perspective to the whole of the complex subject of plant pathology. It comprises twenty accounts by different authors and they have been placed in five sections. In section I five case studies are presented in which representative host-pathogen systems are described in detail. Section II contains four chapters reviewing the biochemistry of processes of infection and pathogenesis. Section III is concerned with recognition of pathogens by their host plants and its role in triggering host-plant resistance. Section IV deals with the effects of disease on the metabolism of host plants and Section V contains a single chapter entitled 'Biochemical Plant Pathology and Plant Disease Control' (Brent).

Indeed, much of the motivation for the study of biochemical plant pathology must come from the desire to improve agricultural crop production. Most economically important plant diseases are caused by fungi, yet these offer rather unattractive systems for fundamental biochemical research by reason of the difficulties of establishing representative model systems in vitro and the relative ignorance of plant and fungal biochemistry, physiology and genetics. Bacterial diseases are more attractive in this respect (though of less economic importance): the chapters by Drummond (Crown Gall Disease) and Staskawics (Molecular Genetics of Plant Disease) highlight areas where progress in basic understanding is being made, especially with the use of recombinant nucleic acid technology. Considerable insight into the nature of the products of pathogen virulence and plant resistance genes may be expected from this work, and it also offers the prospect of providing vectors for genetic modification and improvement of crop plants. How quickly the control of economically important plant diseases may be improved by this work is more questionable. The biochemical function of not one plant resistance gene is understood, and workable strategies for isolating such genes are difficult to conceive, even with present technology.

The lack of consensus on the nature of biochemical mechanisms of pathogenicity, susceptibility and resistance undoubtedly arises, in part, from the great diversity of systems chosen for study. Many of the chapters in the book illustrate the almost anecdotal nature of the evidence that has been accumulated in specific diseases and the difficulties of working with plant pathogen systems. In some areas progress has been made despite the difficulties: the chapter by Manners and Gay on the host–fungus interface and nutrient transfer in biotrophic parasitism is an instructive one.

Recognition of pathogen by host, and its role in triggering defence reactions is an intense area of debate amongst plant pathologists, but Professor Callow has not allowed it to dominate the book since the chemical, biological and genetic evidence